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# PATENT SPECIFICATION

(11) 1 553 121

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- (21) Application No. 14459/77 (22) Filed 5 April 1977  
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(33) Finland (FI)  
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(51) INT CL<sup>2</sup> B62D 13/06//53/00  
(52) Index at acceptance B7H A2E4



## (54) TRACTOR AND TRAILER VEHICLE COMBINATION

(71) We, RAUMA-REPOLA OY, a Finnish Corporation, of Lokomon Tehtaat, PL 306—397, 33101 Tampere 10, Finland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a tractor and trailer vehicle combination having means for facilitating reversing.

In many tractor and trailer vehicle combinations, reversing presents difficulties. This is particularly so where the tractor vehicle has a long wheel base and/or little rear overhang, or where the length of the towing hitch is unfavourable. A particular example of a vehicle which suffers from this is a large crane vehicle in which the arm of the crane is supported on a trailer during transportation; in such a vehicle the tractor vehicle (the crane proper) has a long wheel base and the towing hitch is short to ensure proper distribution of axle loads.

An object of the present invention is to facilitate the reversing of tractor and trailer vehicle combinations, and particularly but not exclusively large crane vehicles.

Accordingly the present invention provides a vehicle combination comprising a tractor vehicle and a trailer vehicle, the trailer vehicle comprising a frame, rear wheels fixed in relation to the frame, front wheels mounted on a bogie which is pivoted to the frame, and a towing hitch extending from the bogie to form an articulated coupling with the tractor vehicle, and including means for selectively locking the bogie with respect to the trailer vehicle frame in a selected one of a plurality of positions, whereby reversing of the combination is facilitated.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a side view of a crane vehicle combination;

Fig. 2 is a side view of the front portion of the trailer of Fig. 1; and

Fig. 3 is a plan view of the parts shown in Fig. 2.

In Fig. 1 the crane vehicle combination is in the transport condition with the arm 4 of the crane (the tractor vehicle 1) in a substantially horizontal position and supported at its free end on a separate trailer 2. The trailer 2 is provided with supporting means 8 at a front bogie thereof for supporting the arm 4. A towing hitch 3 forms an articulated coupling between the tractor 1 and the bogie 5; to give appropriate axle loads in the combination, the hitch 3 must be short.

As can be seen from Fig. 1, the wheel base of the tractor vehicle is long and the rear overhang short.

The combination is provided with a locking system 7 by means of which, for the purposes of reversing, it is possible to lock the bogie 5 and thus the front wheels of the trailer 2 in a fixed position with respect to the trailer. This fixed position may be either with the trailer in line with the tractor or at an angle thereto. Such locking greatly facilitates reversing of the combination.

Figs. 2 and 3 show in detail a pin-and-hole system which may be used as the locking system. A vertical locking pin 9 is positioned at the front edge of the frame of the trailer 2 and is actuated by a pneumatic cylinder 11. A desired number of holes 10 are formed on the bogie 5 along an arc of a circle. By means of the pneumatic cylinder 11, the pin 9 can be moved down into a selected hole 10 so that the bogie 5 is locked with respect to the trailer 2. The hole may be selected to lock the trailer in line with the tractor or at an angle thereto. The locking may be removed by operating the pneumatic cylinder 11 to lift the pin 9 from the hole 10. The cylinder 11 may be controlled electrically from the driver's cabin. When the system is provided with sufficiently frequent locking steps and with indicators in the driver's cabin indicating the occurrence of locking and the angular position of the trailer, reversing the vehicle combination is quite easy after a little training.

Instead of the above pin-and-hole locking

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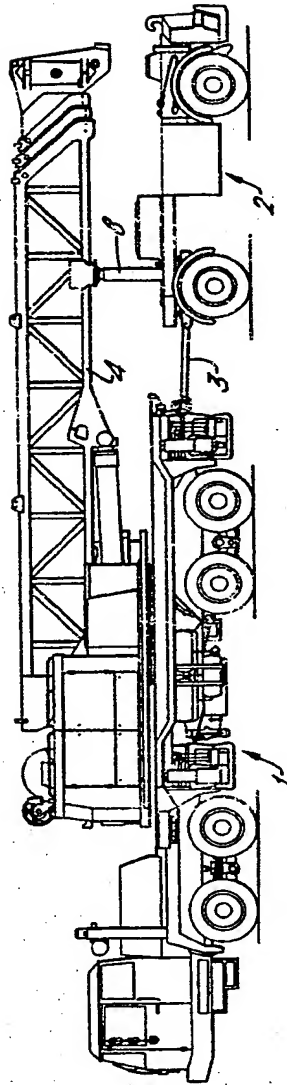
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COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of  
the Original on a reduced scale  
Sheet 1

FIG. 1



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FIG. 2.

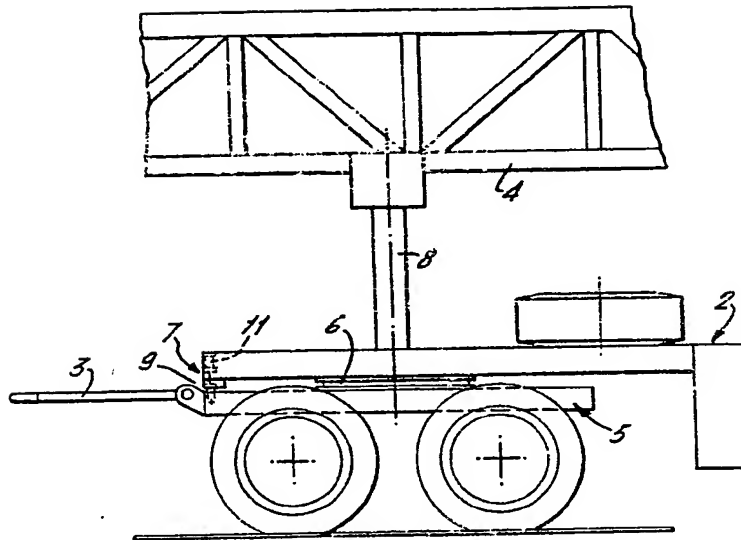
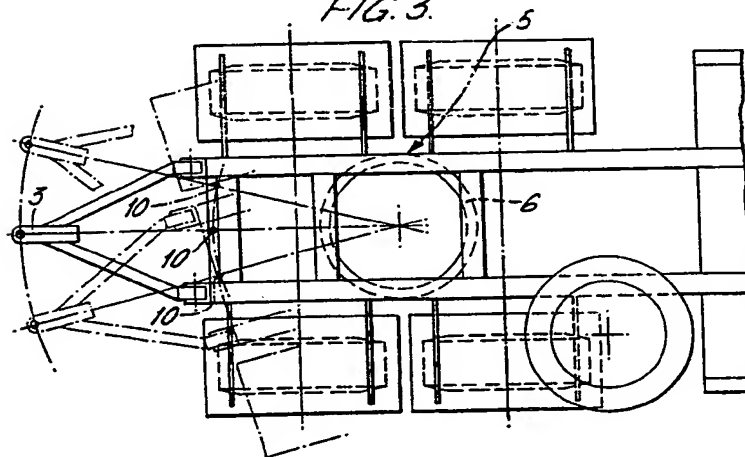


FIG. 3.



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